



MASTER OF SCIENCE DEGREE IN APPLIED ANATOMY
Joint Degree Program (MD/MS) for Medical Students
Case Western Reserve University School of Medicine



The **Master of Science in Applied Anatomy** can be obtained in this joint MD/MS degree program by medical students seeking **advanced training in the anatomical sciences**. The Anatomical Sciences Core Curriculum (ASCC) integrates aspects of modern molecular biochemistry, cell biology, and physiology into the traditional aspects of anatomical structure and nomenclature of cells, tissues, and organs. The elective courses allow curriculum flexibility for students to emphasize their diverse individual interests in specific areas of research and health care. The program can be undertaken and completed concurrently with the medical curriculum, particularly if the student enters the graduate program during the first year of medical school. The Master of Science in Applied Anatomy provides an excellent preparation for individuals pursuing careers involving a rigorous understanding of the anatomical sciences.

Acceptance into the Master of Science in Applied Anatomy program requires that the student be in good academic standing in the medical curriculum at the time of matriculation into the program, and a letter of approval from their respective Associate ('Society') Dean of Student Affairs. The Graduate Executive Council of the Department of Anatomy coordinates and reviews the graduate program of study for individual students.

The MS degree program requires a minimum of 30 graduate course credits (no additional tuition is required for enrolled medical students). Required courses include 21 credits from the Anatomical Sciences Core Curriculum plus a surgical anatomy course* in spring of the fourth year. The remaining credits are elective courses selected by students to fulfill their individual interests and goals. A research thesis is not required (Plan B), although research experience may be obtained as elective coursework ANAT 499: Independent Study with individual faculty members. The thesis-based (Plan A) master of science program requires a minimum of 6 credits of ANAT 651: Thesis MS for preparation then defense of a master of science thesis.

Comprehensive written and oral exams covering the basic scientific principles presented in the curriculum must be passed after successful completion of the coursework comprising the Anatomical Sciences Core Curriculum.

ANATOMICAL SCIENCES --- CORE CURRICULUM: MD/MS

ANAT 412/3	Histology & Ultrastructure/Laboratory (Fall)	ANAT 411	Gross Anatomy (Spring)
ANAT 414/5	Neurological Anatomy/Laboratory (Fall)	ANAT 491	Embryology (Spring)
		ANAT 497/8	Scientific Presentations Seminar (Fall & Spring)

Surgical Anatomy: (4th year blocks – minimum one required (ANAT 411 = prerequisite))

*ANAT 515 MusculoSkeletal & Orthopedics (Block 4)

*ANAT 513 Thorax & Abdomen (Block 9)

*ANAT 516 Head & Neck (Block 10)

SELECTED ELECTIVES

ANAT 420	Forensic Pathology (Fall)	ANAT 424	Neural Integrative & Regulatory Mechanisms (Spring)
ANAT 431	Statistical Methods (Fall)	ANAT 477	Human Osteology (Spring)
ANAT 435	Morphometrics of Biological Shapes (Fall)	ANAT 483	Evolutionary Anatomy (Spring)
ANAT 475	Human Evolution: The Fossil Evidence (Fall)	ANAT 523	Histopathology of Organ Systems (Spring)
ANAT 484	Development & Evolution: Vertebrate Skull (Fall)	ANAT 530	Basic Facial Reconstruction (Summer)
ANAT 499	Independent Study (Fall/Spring/Summer)	ANAT 610	Oxygen and Physiological Function (Spring)
ANAT 503	Readings and Discussions (Fall/Spring/Summer)	ANAT 651	Thesis MS (Fall/Spring/Summer)



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RECOMMENDED MD/MS PROGRAM OF STUDY SCHEDULES

Schedule I -- 'Traditional entry'		Schedule II -- 'Early entry'	
		Recommended --- 'new' medical curriculum	
MD I:	Fall		
	None	ANAT 412 (<i>Histo'</i>)	4
		ANAT 413 (<i>Histo' lab</i>)	2 (=6/6)
	<i>Apply to MS program: Department of Anatomy; School of Graduate Studies</i>		
	Spring		
	ANAT 411	ANAT 411 (<i>Gross'</i>)	6
	ANAT 491	ANAT 491 (<i>Embryo'</i>)	3
	ANAT 497	ANAT 497 (<i>Seminar I</i>)	1 (≥10/16)
			1 (=10 semester/10 total credits)
	Summer		
MD II:	Fall	[Continuous enrollment in ANAT 651 for Thesis MS (Plan A)]	
	ANAT 412	ANAT 414 (<i>Neuro'</i>)	3
	ANAT 413	ANAT 415 (<i>Neuro' lab</i>)	1
	ANAT 414	ANAT 498 (<i>Seminar II</i>)	1
	ANAT 415	Elective	(≥5/21)
	ANAT 498		1 (=11/21)

[Master of Science ASCC Comprehensive Examination (February)]

	Spring	[Begin clinical / research rotations - ANAT 499: Independent Study during research rotation]	
	ANAT 499	ANAT 499 (<i>Research</i>)	1 (≥1/≥22)
MD III:		[Continue clinical / research rotations - ANAT 499: Independent Study during research rotation]	
	Fall / Spring		
	None	None	
MD IV:			
	Fall / Spring	[Surgical Anatomy courses 1 block each.]	
	Surgical Anatomy I	4 (≥4/ ≥26)	[Required for <u>all MD/MS</u> schedules]
	Surgical Anatomy II	4 (≥4/ ≥30)	[Required if needed to achieve 30 credits]